

CURRENT ACTIVITIES

- TECHNOLOGY ROADMAP FOR FOOD PROCESSING, ELECTRONICS AND WATER TREATMENT TECHNOLOGIES
- APPLIED TO US DOE TO DEVELOP TECHNOLOGY ROADMAPS AND PROJECT FUNDINGS FOR PETROLEUM AND CHEMICAL INDUSTRIES.

PLANNED ACTIVITIES

- AIRCOMPRESSOR BECNHMARKING
- ABSORPTION COOLING FOR INDUSTRIAL REFRIGARTION
- ELECTROLYSIS FOR WINE INDUSTRY
- ELECTRICAL RELIABILITY FOR A SEMI-CONDUCTOR MANUFACTURER

Operating Parameters

<u>Change</u>	<u>Base Year</u>	<u>w/ Project</u>	
Production:	45 M lb/yr	125 M lb/yr	
+280%			
Line Speed	75 birds/min	90 birds/min	
Schedule:	1 shift, 260 days	2 shifts, 300 days	
<u>Total Water Use:</u>	7.0 gals/bird	2.8 gals/bird	-
60%			
City Water Use	39 ccf/yr	20 ccf/yr	-
40%			
<u>Specific Power*</u>	70 Wh/bird	64 Wh/bird	-
8%			
Sanitizing Agents:	Cl ₂ & ClO ₂	Ozone	

Components & Capital Costs

• 30,000 gals Chiller	\$400,000*
• 45-gpm UF Recycle System	200,000
• 125-gpm UF Recycle System	750,000
• 100 gpm Filtration Reuse System	350,000
• 3 x 20 lb/day O ₃ Generators	110,000
• Tank, Chiller Cover, Bird Washer	165,000
• Other & Project Mgmt	<u>225,000</u>
TOTAL CAPITAL ESTIMATE:	\$2,200,000

* already purchased and installed by PPP

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City Water Use 40%	39 ccf/yr	20 ccf/yr	-
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Recycling Chiller-Bath Rinse Water in Poultry Processing*

Commercial Project

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WaterTech Partners

U.C. Davis - CIFAR Seminar

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** Public Interest Energy Research Contract 500-98-030
funded by the California Energy Commission and
EPRI*

Commercial Project – Part II

- Situation
- Opportunity
- Concept
- Before/After Operating Parameters
- Components & Capital Costs
- Expected Efficiency Improvements
- Financial Analysis

Situation

- PIER project showed efficacy of using ozone to replace chlorine and cost-effectiveness of chiller-water recycling
- Market exists for PPP to increase production
- Limiting factor for increasing production is water availability
- City of Petaluma water (\$2.60 /ccf) and wastewater (\$2.80 /ccf) rates are relatively high
- City favors conservation over increasing water supply and wastewater capacity (POTW effluent flows to SF Bay)
- As organic producer, PPP would like to be first poultry processor to adopt “chlorine-free” sanitation process

Opportunity

- City of Petaluma initiating Industrial Water Efficiency Program (IWEP) to “hold the flow” for 10 years
- PPP project ideal fit and “lead-off” for IWEP program
- RFP for Grants for Urban Water Efficiency Projects using state bond funds due 3/1/02
- Timing good to apply for NICE³ Grant from DOE for commercial PPP project based on PIER results

Concept

❑ **Expand in-plant water recycling and reuse**

- 2nd shift can be added to increase production by >200%
- >25% reduction in City water is achieved to meet City's IWEP goal
- groundwater use remains about same as present

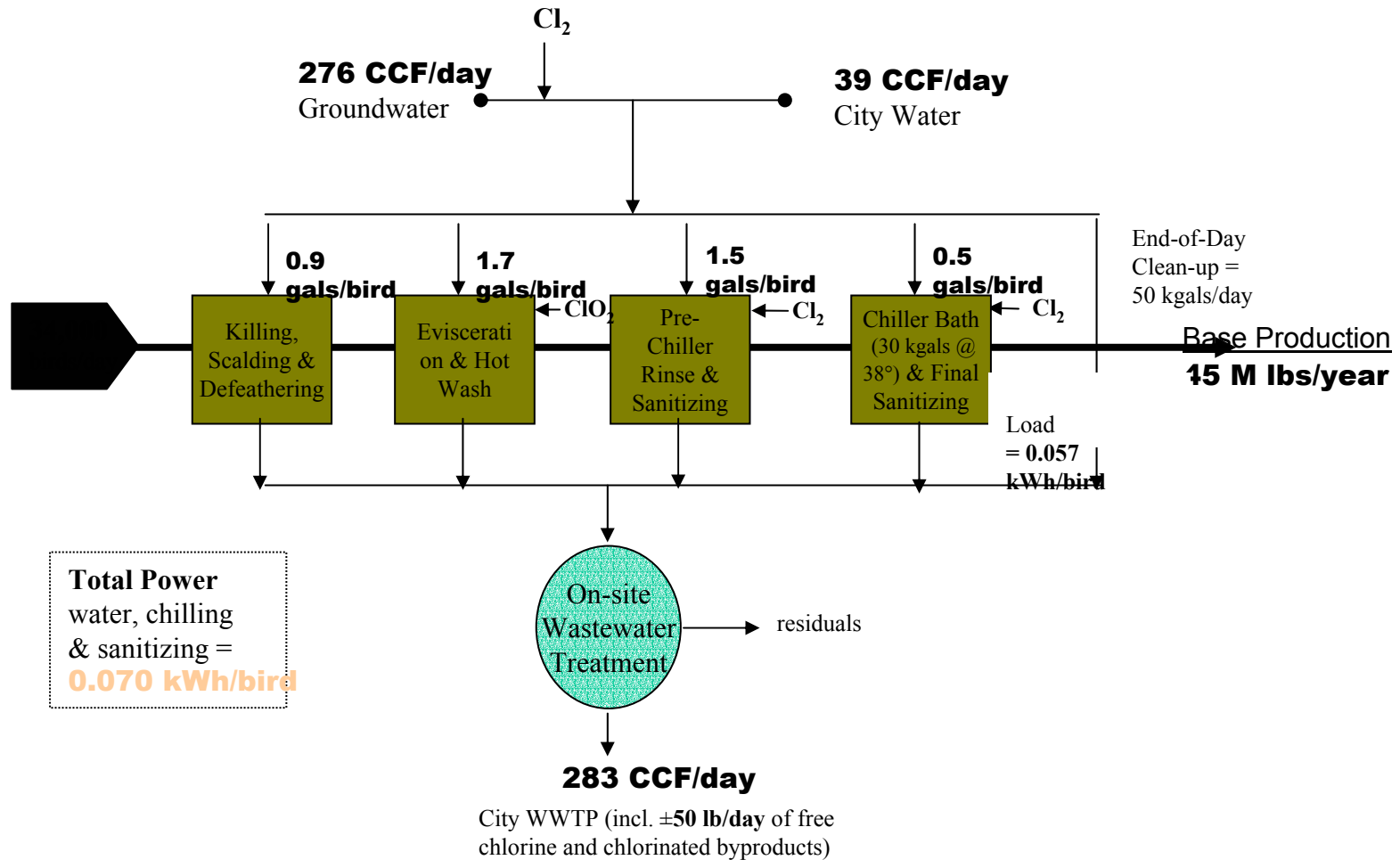
❑ **Achieve net reduction in specific power use**

- recycling 45 gpm of 38°F chiller-bath overflow water
- savings 30,000 gals. of chiller fill-up water overnight

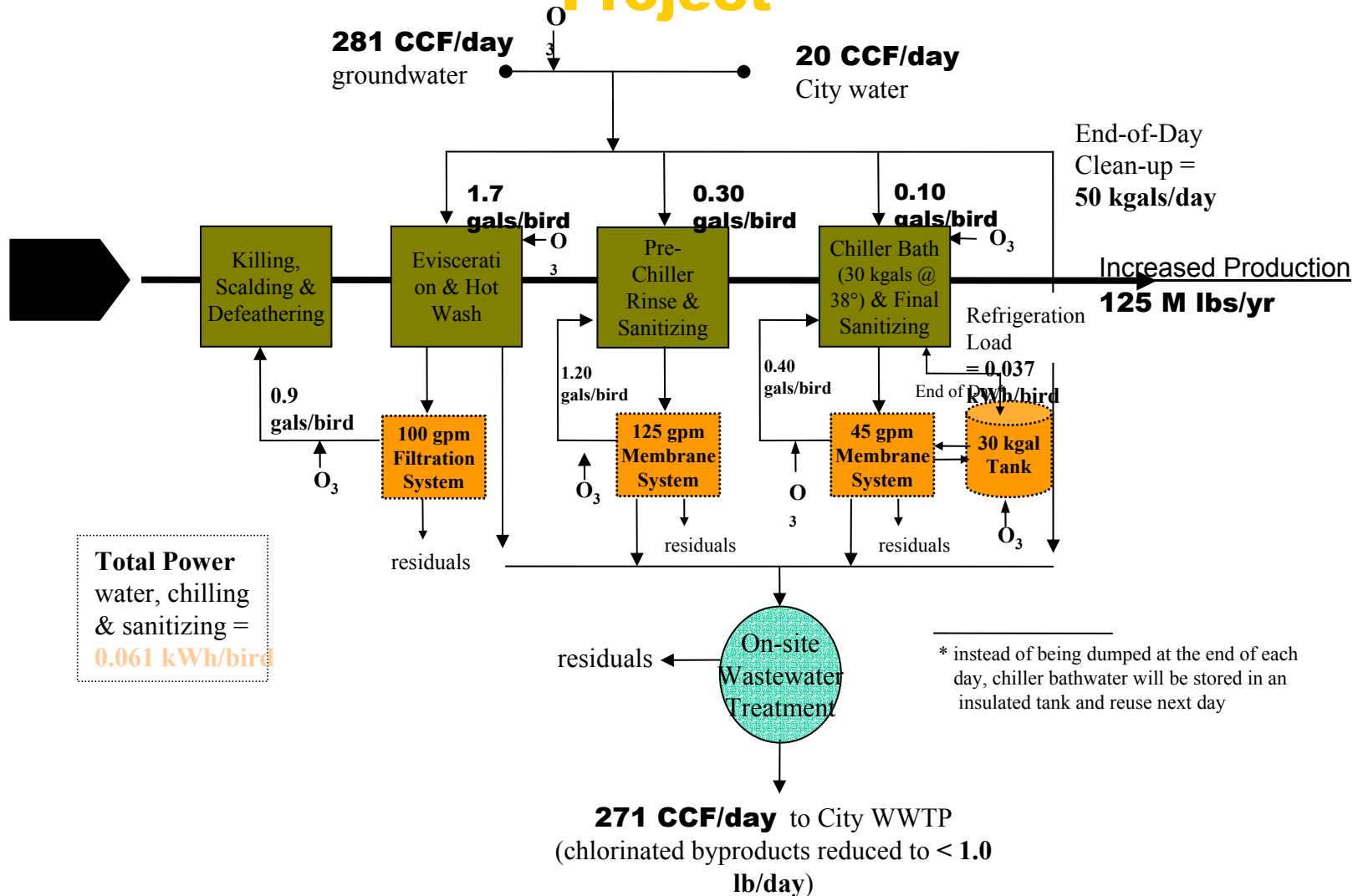
❑ **Replace all use of chlorine chemicals with ozone**

- Chlorine and chlorinated organics eliminated from wastewater
- PPP is first producer to use chlorine-free sanitization process

Base Year (2000) Operating Scheme



New Operating Scheme with Project



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Efficiency Improvements

- Production (birds/yr) 8,775,000 24,300,00
+277%

- Water Supply, Chilling, Treatment & Disposal

– \$/year	\$351,767	\$629,169	
– \$/bird	\$0.040	\$0.026	-
			35%

- Anti-Microbial Agents

– \$/year	\$18,720	\$6,126	
– \$/bird	\$0.002	nil	-
			88%

- TOTAL O&M COSTS

– \$/year	\$370,487	\$635,295	
– \$/bird	\$0.42	\$0.26	

39%

Financial Analysis

❑ **Proposed Capital Cost Sharing: 50:50**

Grant Request from CALFED = **\$1.1 million**

❑ **City of Petaluma:**

- @Avoided water costs of \$1.14 /ccf
- @ Avoided waster water of \$1.66 /ccf

Present Value of 80% of Project's Net Benefits @ 6% discount rate is \$1.4 million = **1.25 benefit/cost ratio**

❑ **Petaluma Poultry:**

- Required New Investment = \$700,000

Net present Value @ 12% discount rate = **\$1.0 million**